WHAT IS CLAIMED IS:

1. An electron-emitting device comprising a pair of oppositely disposed electrodes and an electroconductive film arranged between the electrodes and including a high resistance region, characterized in that the high resistance region has a deposit containing carbon as a principal ingredient.

2. An electron-emitting device according to claim 1, wherein said deposit containing carbon as a principal ingredient is also present in the vicinity of said high resistance region.

3. An electron-emitting device according to claim 2, wherein said deposit containing carbon as a principal ingredient is present on said electroconductive film from part of said high resistance region.

4. An electron-emitting device according to claim 3, wherein said deposit containing carbon as a principal ingredient is present particularly on one of said electrodes from said high resistance region.

5. An electron-emitting device according to claim 4, wherein said deposit containing carbon as a principal ingredient is present particularly on part of the electroconductive film close to the higher

potential one of said electrodes from said high resistance region.

6. An electron-emitting device according to claim 1, wherein said electroconductive film is made of electroconductive fine particles.

7. An electron-emitting device according to claim 6, wherein said electroconductive fine particles are made of metal or an oxide of metal.

8. An electron-emitting device according to claim 6, wherein at least part of said electroconductive fine particles are coated with said deposit.

9. An electron-emitting device according to claim 1, wherein said high resistance region contains electroconductive fine particles.

10. An electron-emitting device according to claim 9, wherein at least part of said electroconductive fine particles are coated with said deposit.

11. An electron-emitting device according to claim 1, wherein at least part of said electrodes are coated with said deposit containing carbon as a principal ingredient.

12. An electron-emitting device according to claim 1, wherein said deposit containing carbon as a principal ingredient is principally made of graphite, amorphous carbon or a mixture thereof.

13. An electron-emitting device according to claim 1, wherein the electron emission current of the device has a monotonically increasing characteristic relative to the voltage applied to said electrodes.

14. An electron source comprising an electron-emitting device for emitting electrons according to input signals, characterized in that said electron-emitting device is a device according to one of claims 1 through 13.

15. An electron source according to claim 14, wherein it comprises a plurality of said electron-emitting devices arranged in a plurality of rows, each of said electron-emitting devices being connected to wirings at opposite ends, and a modulation means for modulating electron beams emitted from said electron-emitting devices.

16. An electron source according to claim 14, wherein it comprises a plurality of said electron-emitting devices arranged in rows and respectively

connected to m X-directional wirings and n Y-directional wirings that are mutually electrically insulated.

17. An image-forming apparatus comprising an electron source and an image-forming member for forming images according to input signals characterized in that said electron source comprises an electron-emitting device according to one of claims 1 through 13.

18. An image-forming apparatus according to claim 17, wherein said electron source comprises a plurality of said electron-emitting devices arranged in a plurality of rows, each of said electron-emitting devices being connected to wirings at opposite ends, and a modulation means for modulating electron beams emitted from said electron-emitting devices.

19. An image-forming apparatus according to claim 17, wherein said electron source comprises a plurality of said electron-emitting devices arranged in rows and respectively connected to m X-directional wirings and n Y-directional wirings that are mutually electrically insulated.

20. An image-forming apparatus according to claim 17, wherein the emission current and the device current of said electron source have a monotonically

increasing characteristic relative to the voltage applied to said devices.

21. An image-forming apparatus according to claim 17, wherein the inside of said image-forming apparatus is maintained to a degree of vacuum that does not allow any additional deposition to be made to said deposit containing carbon as a principal ingredient.

22. A method of manufacturing an electron-emitting device comprising a pair of oppositely disposed electrodes and an electroconductive film arranged between the electrodes, characterized in that it comprises a device activation process.

23. A method of manufacturing an electron-emitting device according to claim 22, wherein said activation process is a process for depositing a deposit containing carbon as a principal ingredient on said electroconductive film.

24. A method of manufacturing an electron-emitting device according to claim 23, wherein said activation process comprises a step of applying a voltage to the electroconductive film arranged between the electrodes in vacuum.

25. A method of manufacturing an electron-emitting device according to claim 24, wherein said voltage is applied in the form of pulse.

26. A method of manufacturing an electron-emitting device according to claim 25, wherein said voltage is above a voltage-controlled-negative-resistance level.

27. A method of manufacturing an electron-emitting device according to claim 26, wherein said voltage is a drive voltage for driving the electron-emitting devices.

28. A method of manufacturing an electron-emitting device according to claim 23, wherein said activation process comprises a step of applying a voltage to the electroconductive film arranged between the electrodes in an atmosphere containing an introduced carbon compound.

29. A method of manufacturing an electron-emitting device according to claim 28, wherein said voltage is applied in the form of pulse.

30. A method of manufacturing an electron-emitting device according to claim 29, wherein said

voltage is above a voltage-controlled-negative-resistance level.

31. A method of manufacturing an electron-emitting device according to claim 30, wherein said voltage is a drive voltage for driving the electron-emitting devices.

32. A method of manufacturing an electron-emitting device according to claim 28, wherein said carbon compound is an organic gas.

33. Method of manufacturing an electron-emitting device according to claim 32, wherein said organic gas has a vapor pressure of not higher than 5,000hPa at the temperature and in the atmosphere of the activation process.

34. A method of manufacturing an electron-emitting device according to claim 33, wherein said organic gas has a vapor pressure of not higher than 5,000hPa at 20°C.

35. A method of manufacturing an electron-emitting device according to claim 32, wherein said organic gas has a vapor pressure between 0.2hPa and 5,000hPa at the temperature and in the atmosphere of

the activation process.

36. A method of manufacturing an electron-emitting device according to claim 35, wherein said organic gas has a vapor pressure between 0.2hPa and 5,000hPa at 20°C.

37. A method of manufacturing an electron-emitting device according to claim 22, wherein it further comprises a forming process.

38. A method of manufacturing an electron-emitting device according to claim 37, wherein said forming process is a step of forming a high resistance region in the electronconductive film arranged between the electrodes.

39. A method of manufacturing an electron-emitting device according to claim 22, wherein said activation process is carried out after said forming process.

40. An electron source comprising an electron-emitting device for emitting electrons according to input signals, characterized in that said electron-emitting device is manufactured by a method according to one of claims 22 through 39.

41. An electron source according to claim 40, wherein it comprises a plurality of said electron-emitting devices arranged in a plurality of rows, each of said electron-emitting devices being connected to wirings at opposite ends, and a modulation means for modulating electron beams emitted from said electron-emitting devices.

42. An electron source according to claim 40, wherein it comprises a plurality of said electron-emitting devices arranged in rows and respectively connected to m X-directional wirings and n Y-directional wirings that are mutually electrically insulated.

43. An image-forming apparatus comprising an electron source and an image-forming member for forming images according to input signals characterized in that said electron source comprises an electron-emitting device manufactured by a method according to one of claims 22 through 39.

44. An image-forming apparatus according to claim 43, wherein said electron source comprises a plurality of said electron-emitting devices arranged in a plurality of rows, each of said electron-emitting devices being connected to wirings at opposite ends,

and a modulation means for modulating electron beams emitted from said electron-emitting devices.

45. An image-forming apparatus according to claim 43, wherein said electron source comprises a plurality of said electron-emitting devices arranged in rows and respectively connected to m X-directional wirings and n Y-directional wirings that are mutually electrically insulated.

46. An image-forming apparatus according to claim 43, wherein the emission current and the device current of said electron source have a monotonically increasing characteristic relative to the voltage applied to said devices.

47. An image-forming apparatus according to claim 43, wherein the inside of said image-forming apparatus is maintained to a degree of vacuum that does not allow any additional deposition to be made to said deposit containing carbon as a principal ingredient.